

Claims

1. A photosensitive element comprising a support film which comprises a biaxially oriented polyester film and a  
5 photosensitive resin composition layer formed on one surface of the polyester film,

wherein a resin layer containing fine particles is formed on the opposite surface of the support film to which the photosensitive resin composition layer is formed, and said  
10 photosensitive resin composition comprises

- (A) a binder polymer having a carboxyl group,  
(B) a photopolymerizable compound having at least one polymerizable ethylenically unsaturated group in the molecule, and  
15 (C) a photopolymerization initiator.

2. A photosensitive element having a layer of a photosensitive resin composition on a support film, which comprises having a heat shrinkage ratio in the lateral direction of the support  
20 film at 200°C for 30 minutes being 0.00 to 4.00%, and said photosensitive resin composition comprises

- (A) a binder polymer having a carboxyl group,  
(B) a photopolymerizable compound having at least one polymerizable ethylenically unsaturated group in the molecule, and  
25 (C) a photopolymerization initiator.

3. The photosensitive element according to Claim 2, wherein the heat shrinkage ratio in the lateral direction of the support  
30 film at 150°C for 30 minutes is 0.00 to 0.20%.

4. The photosensitive element according to Claim 2, wherein the heat shrinkage ratio in the lateral direction of the support  
film at 105°C for 30 minutes is 0.00 to 0.20%.

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5. A photosensitive element having a layer of a photosensitive

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resin composition on a support film, which comprises having a heat shrinkage ratio in the lateral direction of the support film at 150°C for 30 minutes being 0.00 to 0.20%, and said photosensitive resin composition comprises

- 5 (A) a binder polymer having a carboxyl group,  
(B) a photopolymerizable compound having at least one polymerizable ethylenically unsaturated group in the molecule, and  
(C) a photopolymerization initiator.

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6. The photosensitive element according to Claim 5, wherein the heat shrinkage ratio in the lateral direction of the support film at 105°C for 30 minutes is 0.00 to 0.20%.

- 15 7. A photosensitive element having a layer of a photosensitive resin composition on a support film, wherein a contact angle (°) of the support film with water satisfies the following numerical formula (1):

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$$\frac{(\text{Contact angle at X surface})}{(\text{Contact angle at Y surface})} > 1.1 \quad (1)$$

wherein X surface means a surface of the support film to which the photosensitive resin composition is coated and dried; and Y surface means a surface of the support film opposite to the surface to which the photosensitive resin composition is coated,

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and said photosensitive resin composition comprises

- (A) a binder polymer having a carboxyl group,  
(B) a photopolymerizable compound having at least one polymerizable ethylenically unsaturated group in the molecule, and  
30 (C) a photopolymerization initiator.

8. The above photosensitive element according to Claim 2, wherein the support film is a support film comprising a resin layer containing fine particles being laminated on one surface of a biaxially oriented polyester film, and the photosensitive
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resin composition layer is coated and dried on the opposite surface of the support film to which the resin layer is formed.

9. The photosensitive element according to Claim 1, wherein  
5 an average particle size of the fine particles is 0.01 to 5.0  $\mu\text{m}$ .

10. The photosensitive element according to Claim 1, wherein  
10 a thickness of the resin layer containing fine particles is 0.05 to 5.0  $\mu\text{m}$ .

11. The photosensitive element according to Claim 1, wherein  
a haze of the support film is 0.01 to 5.0%.

12. The photosensitive element according to Claim 1, wherein  
15 a heat shrinkage ratio in the longitudinal direction of the support film at 105°C for 30 minutes is 0.30 to 0.60%.

13. The photosensitive element according to Claim 1, wherein  
20 a heat shrinkage ratio in the longitudinal direction of the support film at 150°C for 30 minutes is 1.00 to 1.90%.

14. The photosensitive element according to Claim 1, wherein  
25 a heat shrinkage ratio in the longitudinal direction of the support film at 200°C for 30 minutes is 3.00 to 6.50%.

15. The photosensitive element according to Claim 1, wherein  
a weight average molecular weight of (A) the binder polymer having a carboxyl group is 20,000 to 300,000.  
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16. The photosensitive element according to Claim 1, wherein  
an acid value of (A) the binder polymer having a carboxyl group is 50 to 300 mg KOH/g.

17. The photosensitive element according to Claim 1, wherein  
35 (B) the photopolymerizable compound is a bisphenol A type

(meth)acrylate compound.

18. The photosensitive element according to Claim 1, wherein  
(C) the photopolymerization initiator is 2,4,5-triaryl  
5 imidazole dimer.

19. The photosensitive element according to Claim 1, wherein  
formulation amounts of Components (A), (B) and (C) are  
40 to 80 parts by weight of Component (A) based on 100 parts  
10 by weight of Component (A) and Component (B) in total,  
20 to 60 parts by weight of Component (B) based on 100 parts  
by weight of Component (A) and Component (B) in total, and  
0.01 to 20 parts by weight of Component (C) based on 100 parts  
by weight of Component (A) and Component (B) in total.

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20. A photosensitive element roll according to any one of  
Claims 1 to 19, wherein the above photosensitive element is  
wound up or rolled around a core.

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21. A photosensitive element roll in which the photosensitive  
element is wound up around a core, wherein a total height of  
winding deviation at the edge surface of the photosensitive  
element roll after naturally dropping the photosensitive  
element roll five times from the height of 10 cm to the collision  
25 surface so that the axis direction of the core becomes  
perpendicular to the collision surface is 1 mm or less.

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22. A process for preparing a resist pattern which comprises  
laminating the photosensitive element according to any one of  
Claims 1 to 20 to a substrate for forming a circuit so that the  
photosensitive resin composition layer is closely contacted to  
the substrate, irradiating imagewisely active light to  
photocure the exposed portion, and removing an unexposed  
portion by development.

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23. A resist pattern prepared by the preparation process

24. A resist pattern in which unevenness on the side surface of the resist pattern is 0 to 3.0  $\mu\text{m}$ .

25. A resist pattern in which a number of unevenness larger than 3.0  $\mu\text{m}$  on the center line of the side surface of the resist pattern is 0 to 5/4 mm.

27. The resist pattern according to Claim 26, wherein a maximum height ( $R_y$ ) on the side surface of the resist pattern is 0 to 3.0  $\mu\text{m}$ .

28. A resist pattern comprising a maximum height ( $R_y$ ) on the side surface of the resist pattern of 0 to 3.0  $\mu\text{m}$ .

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Sub  
A 20

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31. The resist pattern laminated substrate which comprises the resist pattern according to any one of Claims 24 to 28, wherein it is formed on a substrate for preparing a circuit.

30 32. A process for preparing a wiring pattern which comprises  
subjecting the resist pattern laminated substrate according to  
Claim 31 to etching or plating.

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